

Claims

1    1.    A folding apparatus (100) for inserting an air bag and housing into  
2    an interior cavity of a cover, the apparatus comprising:

3                 an arcuately shaped tube, the tube sized to slidably receive  
4    the housing and permit the air bag to be drawn up into the tube, the tube  
5    including an open first end oriented so that a plane through the first end is  
6    at a desired orientation;

7                 ram means movable through the tube for holding and  
8    moving the housing and air bag through the tube;

9                 holding means for orienting the cover so that its internal  
10   cavity is in alignment with and adjacent to the first end such that the  
11   housing and air bag can be rammed into the cover cavity.

1    2.    The apparatus as defined in Claim 1 wherein that portion of the  
2    ram means that holds the housing is movable along a radial direction.

1    3.    The apparatus as defined in Claim 1 wherein the ram means is  
2    movable through and out of the tube to a position convenient for the user  
3    of the apparatus to install and dismount the housing and air bag onto and  
4    off from the ram means.

1    4.    The apparatus as defined in Claim 1 wherein the air bag is rammed  
2    directly into the cover.

1    5.    The apparatus as defined in Claim 1 wherein the ram means  
2    include first means for rotating the cover, housing and air bag and  
3    wherein the first means includes a support portion for holding the housing,

4 the first means is rotatable to a preferred orientation to enable the user of  
5 the apparatus to orient the cover, housing and air bag to this preferred  
6 orientation to facilitate dismounting the housing, cover and air bag as a  
7 unit and the subsequent assembly an air bag module.

1 6. The apparatus as defined in Claim 5 wherein the first means  
2 includes a pivot about which the support portion can rotate.

1 7. The apparatus as defined in Claim 5 wherein the first means  
2 includes a lock means for locking and unlocking the support portion from  
3 other portions of the first means.

1 8. The apparatus (100) as defined in Claim 1 wherein a wall of the  
2 tube includes a slot or channel, and wherein the ram means is movable  
3 through the channel.

1 9. The apparatus as defined in Claim 1 wherein the tube is of a  
2 hollow, circular-sector shape.

1 10. The apparatus as defined in Claim 1 wherein the ram means  
2 includes a ram arm pivotally mounted on one end thereof and a ram  
3 element operatively linked to the ram mounting member.

1 11. The apparatus as defined in Claim 10 wherein the ram element is  
2 pivotably movable from a first position relative to the ram member, to a  
3 second position in which the ram element is substantially horizontal and  
4 such that if the cover were attached to the ram element the cover would  
5 lie substantially horizontal at the second orientation.

1   12.   The apparatus as defined in Claim 1 wherein the holding means  
2   includes a clam-shell mechanism for sandwiching the cover, in a preferred  
3   orientation, therebetween.

1   13.   The apparatus as defined in Claim 12 wherein the clam-shell  
2   mechanism includes a first cover support member secured proximate the  
3   first end of the tube.

1   14.   The apparatus as defined in Claim 13 wherein the clam-shell  
2   member further includes a second cover support member movable  
3   relative to the first cover support member.

1   15.   The apparatus as defined in Claim 1 wherein the desired  
2   orientation is substantially vertical.

1   16.   The apparatus as defined in Claim 1 wherein the cover and air bag  
2   housing are adapted to snap together upon insertion of the housing into  
3   the cover.

1   17.   The apparatus as defined in Claim 1 wherein the cover and air bag  
2   housing are adapted to be riveted together.

1   18.   The apparatus as defined in Claim 1 wherein the air bag is adapted  
2   to be stretched out by interference with interior surfaces of the tube as the  
3   housing is moved up the tube.

1   19.   The apparatus as defined in Claim 8 further including a barrier  
2   means for restricting contaminates from entering into the tube.

1    20.   The apparatus as defined in Claim 1 wherein the ram means  
2    includes force means for forcibly moving the housing and air bag  
3    compressively toward the cover.

1    21.   The apparatus as defined in Claim 1 wherein a plane through a  
2    centerline of the tube is generally vertically oriented.

1    22.   The apparatus as defined in Claim 1 wherein the tube curves one  
2    of upwardly and downwardly.

1    23.   The apparatus as defined in Claim 1 wherein the tube curves in a  
2    horizontal plane.